

In the Claims:

21. (previously presented) A method for including Frame Time Indication for cell searching in a wireless communications system, said method comprising:

transmitting by a mobile station, in each slot of a frame a primary synchronization code and a secondary synchronization code, said secondary synchronization code comprising $\text{Log } 2(N_{\text{ssc}})$ bits of information to be used for a long code indication; and

modulating said secondary synchronization code by one of N_{mod} valid sequences.

22. (previously presented) The method of claim 21, wherein said primary synchronization code and said secondary synchronization code are transmitted at substantially the same time.

23. (previously presented) The method of claim 21, wherein said N_{mod} value is greater than one.

24. (previously presented) The method of claim 21, wherein following properties need to be satisfied if said N_{mod} value is greater than one:

each said secondary synchronization code has sufficient cross-correlation properties; and

5 no cyclic shift of a valid modulating sequence can result in another valid
6 modulating sequence.

1 25. (previously presented) The method of claim 21, wherein said secondary
2 synchronization codes are the same in each slot.

2 26. (previously presented) The method of claim 21, wherein said wireless
communication system is a WCDMA communication system.

1 27. (previously amended) A method for including Frame Timing Indication for cell
2 searching by a mobile station, said method comprising:

3 transmitting, by a mobile station, in each frame, a sequence of about 16 secondary
4 synchronization codes, said secondary synchronization codes comprising $\text{Log}_2(N_{\text{ssc_seq}})$ bits
5 of information to be used to obtain a long code indication; and

6 modulating said secondary synchronization code by one of N_{mod} valid
7 sequences.

1 28. (previously amended) The method of claim 27, wherein said sequence of about 16
2 secondary synchronization codes repeats in each frame.

1 29. (previously presented) The method of claim 27, wherein each said secondary
2 synchronization code is unique.

1 30. (previously presented) The method of claim 27, wherein each said secondary
2 synchronization code is unique and further has auto correlation and cross correlation properties.

1 31. (previously presented) The method of claim 27, further comprising:
2 finding a valid secondary synchronization code sequence; and
3 determining a frame timing indication based on said valid secondary
4 synchronization code.

1 32. (previously presented) The method of claim 27, wherein said long code indication
2 can have 65,536 different values.

1 33. (currently amended) A method for facilitating cell searches in a cellular
2 communications system, comprising the step of:
3 generating, by a base station, an identifying code set;
4 a base station transmitting, by said base station, at least one code word included in
5 an said identifying code set, said identifying code set comprising a plurality of code words each
6 including a plurality of symbols taken from a set of short codes, each code word of said plurality

7 of code words defined such that no symbol-wise cyclic shift of said each code word produces a
8 valid code word.

1 34. (currently amended) The method of Claim 33, wherein said plurality of code words
2 comprises a plurality of ~~Q-ary~~ Q-ary code words, and said set of short codes comprises a set of Q
3 short codes.

1 35. (previously presented) The method of Claim 34, wherein said plurality of Q-ary
2 code words
3 comprises a plurality of length M Q-ary code symbols.

1 36. (previously presented) The method of Claim 33, wherein said identifying code is
2 formed by concatenating an inner and outer code.

1 37. (previously presented) The method of Claim 36, wherein said inner code comprises
2 a tailbiting trellis code.

1 38. (previously presented) The method of Claim 36, wherein said outer code comprises
2 a binary code.

1 39. (previously presented) The method of Claim 37, wherein said tailbiting trellis code
2 comprises an orthogonal trellis code.

1 40. (previously presented) The method of Claim 37, wherein said tailbiting trellis code
2 comprises a superorthogonal trellis code.

1 41. (previously presented) The method of Claim 34, wherein the short codes within the
2 set of Q short codes are orthogonal short codes.

1 42. (previously presented) A method for a mobile station to decode an identifying code
2 transmitted from a base station in a CDMA cellular communications system, comprising the
3 steps of:

4 collecting k times M consecutive symbols, said M consecutive symbols
5 comprising said identifying code;

6 calculating a combined likelihood value for said collected k times M consecutive
7 symbols, thereby producing a set of M consecutive symbols;

8 computing a correlation between each of L code words and each of M cyclic
9 shifts of said set of M combined likelihood values; and

10 storing a code word and number of cyclical shifts made that produced a highest
11 amount of correlation in the computing step.

1 43. (previously presented) The method of Claim 42, wherein said number of cyclical
2 shifts made indicate a frame timing for said identifying code.

1 44. (previously presented) The method of Claim 42, further comprising the step of
2 outputting an identity of said stored code word.

1 45. (previously presented) A method for a mobile station to decode an identifying code
2 transmitted from a base station in a CDMA cellular communications system, comprising the
3 steps of:

4 collecting k times M consecutive symbols, said M consecutive symbols
5 comprising said identifying code;

6 calculating a combined likelihood value for said collected k times M consecutive
7 symbols, thereby producing a set of M consecutive symbols;

8 computing a correlation between said set of M combined likelihood values and
9 each of M cyclic shifts of said L code words; and

10 storing a code word and number of cyclical shifts made that produced a highest
11 amount of correlation in the computing step.

1 46. (previously presented) The method of Claim 45, wherein said number of cyclical
2 shifts made indicate a frame timing for said identifying code.

- 1 47. (previously presented) The method of Claim 45, further comprising the step of
- 2 outputting an identity of said stored code word.
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